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AUTHOR Hammrich, Penny L.; Armstrong, Kerri L.
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ABSTRACT

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Two Cultures of Teacher Preparation: Effects on Teacher Candidates' "World View"

Penny L. Hammrich, Ph.D.
Assistant Professor of Science Education
College of Education
Temple University
Philadelphia, PA 19122

with

Kerri L. Armstrong
Associate Professor of Biology
Community College of Philadelphia
Philadelphia, PA 19130

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Abstract

The present study investigates the observations that teacher candidates majoring in elementary education exhibit a world view very different from teacher candidates majoring in a science discipline while obtaining teacher certification in elementary education. Teacher candidates from two different elementary teacher preparation programs were asked to describe their experiences in two different discipline courses, one in which they do very well and one in which they generally do less well. Analysis of the papers revealed the presence of two distinct world views among the teacher candidates with regard to education and the learning of different discipline courses. Many of the attitudes inherent in these world views appear to have their roots in early experiences in and out of school. Implications for elementary science teaching and teacher education are discussed.

INTRODUCTION

In 1992 *Teaching and Teacher Education* published an article entitled, "The Two Cultures of Teaching and Teacher Preparation," by Thomas J. Shuell. In this article, Shuell investigated the existence of two different world views in prospective secondary education teachers. He sought to examine the orientation of students majoring in the sciences and mathematics versus students majoring in English, literature, and history. Shuell's analysis revealed the presence of two distinct world views among the students majoring in the different disciplines. He found that students majoring in science and mathematics valued world views aligned with traditional positivists views of scientific thinking and devalued the learning of the humanities and more aesthetic studies such as Art, history, English. Students majoring in English and the humanities valued aesthetics and literature while devaluing scientific thinking and processes. Although these results do not seem surprising the implications for teacher preparation are that teachers teaching discipline specific courses convey those attitudes, values, and world views in their classrooms where students may or may not share those same world views.

This study parallels Shuell's process of investigation by examining elementary rather than secondary teacher candidates' world views. In this study "world view" refers to:

> "The world view of people is their way of looking at reality. It consists of basic assumptions and images that provide a more or less coherent, through not necessarily accurate, way of thinking about the world" (Kearney, 1984, p.41).

The purpose for conducting this study is to investigate the existence of these two different world views in elementary teacher candidates. Shuell's

study examined teacher candidates majoring in two different secondary education disciplines; while this study examines elementary teacher candidates prepared under two different teacher preparation programs. One group of elementary teacher candidates where in the traditional four year teacher education program and had taken the minimum three science and math courses as required by the university. The second group of elementary teacher candidates where in an alternative teacher education program, the Five-Year Teacher Education Program. In the Five-Year Teacher Education Program teacher candidates are majoring in an arts and science discipline while minoring in education. The fifth year of the program leads to a masters degree in education and teacher certification. The five-year students in this study were all majoring in a science discipline and working toward elementary teacher certification. Since these teacher candidates are all majoring in a science discipline, they have substantially more coursework in science content. Both groups of elementary teacher candidates have taken the elementary science methods course.

The call for improved science education has long been viewed as a necessary step in promoting scientific literacy among students (Cobern, 1995). The obstacles confronting more effective science education require a greater understanding of how teachers view reality. The objective of this study is to elucidate teacher candidates world views regarding teaching and learning. It will examine qualitatively different conceptualizations concerning teaching and learning held by teacher candidates from two different teacher education programs. More specifically the study sought to investigate the following question: Are there teacher candidates with two very distinct world views preparing to become elementary teachers?

Method

Teacher candidates enrolled in two different elementary teacher preparation programs were asked to write a three to four page paper describing themselves as a learner in two different discipline courses, one in which they do well and one in which they generally do less well. In the paper, they were asked to compare and contrast the way they go about learning in these two courses, addressing such factors as: (a) their background knowledge and experience; (b) how they prepare for class; (c) how they prepare for tests; (d) the learning strategies they used in trying to learn the material; (e) the role played by their feelings and emotions about each subject; and (f) the contribution (both good and bad) that teachers and/or other persons made to their learning. This open-ended technique permitted a full range of responses that were analyzed by content analysis using the constant comparative method as outlined by Strauss (1987). This method measures patterns and trends in an attempt to determine the validity of the world views identified by Shuell (1992) in elementary teacher candidates.

Using qualitative analysis teacher candidates papers where examined to either support or refute the presence of the two world views. The themes that were examined in the papers were: (a) perceived personal relevance and meaningfulness; (b) ways of preparing for class; (c) ways of preparing for tests; (d) experiences with teachers and schools; and (e) the influence of parents and significant others. Participants in this study included twenty teacher candidates in a four year teacher preparation program leading to a baccalaureate degree in elementary education and twenty teacher candidates in the alternative teacher preparation program, the Five-Year Teacher Education Program.

Results

The 40 papers were examined for evidence of the two world views as outlined above. One indication of the teacher candidates' world views was the extent to which they selected a course from each category either science/mathematics versus humanities/English in the description of classes they had been successful or unsuccessful. Of the 40 papers, a total of 35 (87%) of the teacher candidates expressed a two world view orientation in that they were successful in one discipline either science/mathematics or humanities/English and unsuccessful in another discipline. For example, if teacher candidates reported being successful in science and/or mathematics they reported being unsuccessful in the humanities/English. On the other hand teacher candidates who reported being successful in the humanities/English reported being unsuccessful in science/mathematics. This data suggests the presence of a two world view orientation as outlined by Shuell (1992). The numbers of teacher candidates in both preparation programs evidencing this dichotomy are presented in Table 1. It will be revealed that the four year teacher candidates views tended to favor humanities/English and the five year teacher candidates views tended to favor science/mathematics.

Insert Table 1 here

Seventeen (85%) of the five year teacher candidates reported a view that was consistent with their science major. Seven (35%) of the four year teacher candidates reported success in science and math courses while being unsuccessful in humanities/English. No obvious pattern is evident among the eleven teacher candidates (two five year students and nine four year students) whose discussion of courses in which they did well and less well was inconsistent with their reported major (i.e., they reported doing well in a course

from the opposite orientation, and less well in a course representing the same domain as their major). Similarly, no consistent pattern is evident among the 5 students who did not demonstrate a dichotomous view. One five-year teacher candidate discussed being both successful in one science class and not successful in another science class. The 4 four year teacher candidates discussed being both successful in some English courses and not in others.

The most interesting results came from the qualitative analysis of the various teacher candidates' statements. Each statement was examined for themes that either supported or refuted the presence of a two world view orientation. Several themes that support the two world views in these prospective teachers emerged across the various statements. It was evident that many of the views teacher candidates revealed were based on past experience in and out of school. The themes are discussed below in detail.

Personal Relevance and Meaningfulness

Overwhelmingly, teacher candidates identified courses in one discipline that supported their interpretation and views of world. Courses representing the opposite discipline were seen as irrelevant to their interpretation and views of the world. Typical responses from five year teacher candidates were:

> Science has always been a fascinating area of study for me in and out of school. As a very young child I always had an interest in science and nature. I find science classes to extend beyond the classroom for me and really relate to my interpretation of the world...I don't feel that there is anything I have learned in a literature or English class that I feel directly related to my view of the world. I never did very well in these types of classes, probably because I did not see personal relevance in them.

> As a very young child I remember being very curious about nature. I remember receiving gifts such as microscopes and chemistry sets. To me science is all around and I internalize everything in nature to be a extreme significance

> to my life. Therefore, throughout school classes such as science or math have been the areas that have captivated my interest and have supported my personal conviction of nature. On the other hand while I value what is taught in courses such as English or history I just have never found them to be worthwhile to me personally.

> I tend to do better in science courses because they tend to interest me and I see the relevance to my personal life. My mother is a science teacher and science or nature has always had a big influence on my life. When I sit in courses like literature I have no prior interest or background experience for the information to connect to my view of the world.

However, unlike the five year teacher candidates who were majoring in a science discipline and expressed views aligned with learning science; many of the four year teacher candidates saw personal relevance or meaningfulness in courses other than science as is evidenced in the following quotations:

> I am a very creative person and have always loved the humanities and the arts. I find that these subject areas allow me to express myself and really connect with my inner soul. Science courses confuse me and I don't find them to be very accepting of personal expression. I always feel confined and personally restricted in science.

> I find poetry and writing classes to be ones that closest fit me as a person. These classes allow for intimate discussions concerning specific issues. I love to analyze works of thought...I never found any science class to allow me the freedom to create. I always felt there was one right answer that I was never going to figure out.

> Like most people I am sure I tend to do well in classes when they interest me. English has always interested me. I prefer subjects where there is more thinking involved and personal relevance...Science or math have never been one of my favorite subjects because there is a lot of memorization involved and not enough analyzation. I tend to day dream a lot in these types of courses.

Preparation for Class

With regard to their preparation for class, teacher candidates often mentioned that they learned material better or with more understanding if the material was interesting to them and fit with their conceptions of the world. In courses that they reported less success, teacher candidates mentioned that they found difficulty in learning material when it did not fit with what they held to be true or important. Typical responses from five year teacher candidates were:

> In preparing for science classes I always apply the material to my own life and what I hold to be true. I loved the hands-on nature that science provides. In preparing for classes like English I have realized I have no aptitude for. I rarely prepared because I saw no relevance and could relate nothing concerning the topics to my life.

> I have always had an easy time in grasping concepts in science. I always saw the relevance to my personal life. I have found concepts in science to be very applicable to aspects of nature so I find it almost natural to learn about the workings of the world...I learned early on that for me to pass any humanities course I was going to have to learn to memorize. I never could attached meaning to the things I was taught; therefore, I found these courses to be boring and irrelevant to my life.

Four year teacher candidates expressed similar views as the five-year teacher candidates; but more often than not these view tended to be more in favor of literary courses, rather than science courses, as expressed below:

> I find it personally fulfilling to read a great piece of work in English or learn about past history. It is easy for me to prepare for these classes because I find myself analyzing the situations and drawing contrasts and comparisons between works. This has always come easy to me. I love to read and read as much as I can in my spare time...I remember preparing for a science class by going over the lecture material again and again but I still didn't

> understand. I told a tutor that I didn't understand and she said and I quote. "There is nothing to understand, so just take it for what it is worth." So that is what I did and still do. I rote memorize and always do poorly.

> I always find myself wanting to learn more in courses that involve learning about history. These type of courses put me at ease. I always was able to find ways to prepare - some ways were traditional and others were inventive and creative (I was able to do this because the classes were a good experience for me which lead me to think about it more often). On the other hand it is impossible for me to prepare for a science related course. I just don't have the interest or background. To me memorizing a list of terms, facts, or concepts is useless.

Preparation for Tests

Teacher candidates responses as to how they prepared for tests were similar to how they prepared for class. One noted difference was that the teacher candidates revealed that their expectations of success in the course also played a role in their views. An example of a response from a five year teacher candidate was:

> Science comes naturally to me. I see its relevance all around me. So in preparing for a test I find it easy because it is like learning a little more about myself and nature...English, on the other had is an almost impossible task. I often asked myself when preparing for a test what the significance was. Why do I really need to know this. I usually did what I had to pass.

Four year teacher candidates tended to respond in the following fashion:

> In my science classes I would have done anything to make myself retain and understand the information. I always hoped that I got something straight out of it...In humanity type courses I find it very easy to reason out and make logical sense out of the

> material. I try to connect the material with anything else that I already know.

Experience with Teachers and Schools

The teacher candidates' experiences with past teachers and schools contributed to their world views. Teacher candidates responded having a teacher that reaffirmed their way of knowing. Typical responses from five-year teacher candidates included:

> All my English teachers in my opinion were horrible. They scared me so it made it harder for me to approach them when I had a problem or a question. I felt all my English teachers were unapproachable and not on my same level. My science teachers were very interesting and related the material to my life so I did not realize I was learning.

> I always remember having good relationships with my science and math teachers. I saw them as role models or mentors. I found myself connecting with these types of teachers. I found history teachers to be stuffy and showed no interest in the lives of students.

> Back in high school I had a very good experience with a biology teacher. This teacher showed me that science is not just found in a classroom or in a book. From that moment on I have found science to be very much a part of my life. I never found this connection with any of my English teachers. perhaps that is why I never really appreciated literature.

Typical four year teacher candidates responses revealed that teachers reaffirmed their way of knowing. However, most four year teacher candidates revealed that English/humanities teachers were more supportive of their views of the world as noted in the quotes below:

> I remember one English teacher in particular. She seemed to relate the material to the kind of person I am. I mean she related

> the material in away in which I view everything in my life. As for my past science teachers. I remember one Physics teacher who brought me to tears. I felt no support or encouragement and always was made to feel that there was only one right answer. You are either right or wrong and most of the time I was wrong.

> In my art classes I have always had good experiences with teachers. I remember my art teachers always being willing to help anyone and be open to our individual creativity...This is something I never experienced with a science or math teacher. I always felt like an outcast in these classes and never had a teacher I could relate too.

It was also revealed from some of the teacher candidates that their experience with a particular teacher challenged their world view as evident in the following quote:

> I have always had a personal interest in history, English, and literature to the exclusion of my interest in science or math. Growing up I always had good experiences in these types of classes. It wasn't until one of my last science classes in college that a teacher actually peaked my interest in science. This teacher was different than other science teachers I had encountered. The difference was that this teacher opened my eyes to science around me. He also was very accepting of others points of view. I don't remember having to memorize just to pass the course. I started to realize that science is a part of my life and that it does relate to my background and views on life.

Influence of Parents, Family, and Friends

The experiences outside of school were also shown to have great influence on teacher candidates views of the world. A number of teacher candidates gave vivid descriptions of how their life outside of school had

a great influence on their world view. The following excerpts illustrate this point:

> As a student who is pursuing a degree in biology while also pursuing an elementary teaching certificate I can trace my interest in both back to my family. Both my parents are science teachers. Science has always had a big influence in my life. My parents were very instrumental in instilling in me a sense of wonder and curiosity about the world and nature. From the time I was small I was always encouraged to explore nature.
>
> I have to thank my parents for making the right decisions and standing behind my educational experience. They were supportive and encouraged me to follow my interests. My interest have always centered on nature and how it impacts all our lives. My parents were not in science related careers but they encouraged me and provided avenues for me to pursue my interests.

Discussion. Overall, the results suggest the presence of two distinct world views between teacher candidates in the four year teacher education program, and those teacher candidates in the Five-Year Teacher Education Program. These findings are similar to the results Shuell (1992) found in secondary teacher candidates.

Perhaps the most important implication of the present findings is the likelihood that these different world views have a profound effect on the teaching style that an elementary teacher develops and emulates in the classroom. Furthermore, this study reveals that any teacher education course, including a elementary science methods course, may contain students from both world views. This contradicts Shuell's (1992) statement that "most courses in teacher education - with the exception of methods courses in specific content areas - contain students from both cultures" (p. 88) . Thus teacher educators need to be aware of the complexity of world views teacher candidates bring to

the classroom and provide experiences that are meaningful for a variety of students. A second implication is that teacher candidates will be teaching elementary students who may not hold the same world view that they hold. This may imply that teacher candidates will favor their world view in the classroom at the expense of other world views. This maybe a reason why elementary teacher candidates with a world view other than a scientific world view report not teaching science in the elementary classroom. These teachers do not see the relevance of science in their lives and therefore choose not to teach science. Thus, teacher educators are challenged to address how science and math relates to elementary teacher candidates lives in order to expand their appreciation of different world views.

In this study it is apparent that a teacher candidates' world view had to do with how they viewed a disciplines relevance to their real life. There are several ways in which teacher education programs can try to accommodate such differences in world views. First of all teacher education programs can facilitate teacher candidates exploration and reflection of their own world view. Secondly, teacher candidates need to understand the different world views that exist in the classroom among their peers and discuss these different world views with the realization that they will encounter many more diverse world views while teaching. From this understanding comes the necessity for teacher educators to provide strategies for teacher candidates to account for and valorize these different world views. One such strategy that could be incorporated is for teacher candidates to make subject matter relevant to students lives by helping students make meaning out of the material.

The exact meaning of differences among the academic preparation of teacher candidates is not entirely clear, but if they exist, they do seem to have important consequences for both teaching and teacher education. Inquiries into

teacher candidates "world views" may provide insights into the effects of teacher education programs and suggest program improvements to better prepare teacher candidates (McDermott, Gormley, Rothenberg, & Hammer, 1995).

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Table 1

Number of Teacher Candidates In Two Teacher Education Programs that Reflect a Two World View Orientation

	Evidence of two-culture view?		
Program	Yes	No	Total
Five-Year	19	1	20
Four-Year	16	4	20
Total	35	5	40